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10/809,685	03/26/2004	Thomas Kolze	1875.4070001	7878

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EXAMINER	
ANDREWS, LEON T	
ART UNIT	PAPER NUMBER
2462	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/809,685	KOLZE ET AL.	
	Examiner	Art Unit	
	LEON ANDREWS	2462	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,9-11 and 20-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,9-11 and 20-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. **Claims 1, 9-11 and 20-36** are rejected under 35 U.S.C. 103 (a) as being unpatentable by Grimwood et al. (Pub. No.: US 2001/0033611 A1) in view of Rakib (Pub. No.: US 2004/0095963 A1).

Regarding Claim 1, Grimwood et al. discloses a method (method, Title, line 1) and apparatus (Fig. 6 CU, CMTS) for maintaining synchronization in a communication system wherein a central entity transmits a signal containing timing information to one or more remote devices, the one or more remote devices using the timing information for scheduling transmissions (Fig. 6, 256, Sync message includes sample of timestamp and CMTS sends sync message; transmitting timestamp data downstream from the CU allow the RUs to align their upstream frame to the CU upstream frame, paragraph [0082], page 7, lines 2-5), the method comprising:

synchronizing (downstream symbol clock synchronized with the CU master clock, paragraph [0012], page 2, lines 11-12) a first symbol clock (Fig. 1, master clock 10; CU master clock, paragraph [0012], page 2, line 12) of a first downstream transmitter (Fig. 1, SCDMA 18 (transmitter); first genus is that the master clock generates clock signal and transmits in one direction, paragraph [0012], page 2, lines 33-37) in the central entity (Fig. 1, CU) and a second symbol clock (Fig. 1, chip clock; downstream symbol clock, paragraph [0012], page 2, line 9) of a second downstream transmitter in the central entity (Fig. 1, CU; all clocks being synchronized in the CU, paragraph [0020], page 3, lines 3-5);

transmitting a first downstream signal (Fig. 1; first genus is that the master clock generates clock signal and transmits in one direction, paragraph [0012], page 2, lines 33-37) using a first downstream transmitter (Fig. 1, SCDMA 18 (transmitter); first genus is that the master clock generates clock signal and transmits in one direction, paragraph [0012], page 2, lines 33-37) in the central entity (Fig. 1, CU) to the one or more remote devices (Fig. RU), wherein the first downstream signal includes timing information based on the first symbol clock (downstream first sync message activated signal with timestamp CMTS_SYNC_TS in the CU, paragraph [0104], page 10, lines 1-5);

terminating transmission of the first downstream signal (Fig. 22, start/end of superframe); and

transmitting a second downstream signal (synchronous clock signal transmission for other direction, paragraph [0012], page 2, lines 38-39) using the second downstream transmitter to the one or more remote devices (Fig. 1, RU), wherein the second signal includes timing information based on the second symbol clock (symbol clock signal generated by time base 401, [0183], page 18, lines 2-3).

Grimwood et al. fails to disclose second downstream transmitter and signal using the second downstream transmitter.

But, Rakib discloses downstream transmitter transmits sync message (signal) which contains the timestamp, paragraph [0016], page 2, lines 1-3.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Rakib's limitation because this would have allowed

synchronization on the downstream in the CMTS which serves as the master clock, paragraph [0002], page 1, lines 3-6).

Regarding Claims 9, Grimwood et al. discloses an apparatus (Fig. 6 CU, CMTS) in a communication system (communicating system, Abstract, line 1), the apparatus comprising:

a first downstream transmitter (Fig. 1, SCDMA 18 (transmitter) adapted to transmit a first downstream signal (Fig. 1; first genus is that the master clock generates clock signal and transmits in one direction, paragraph [0012], page 2, lines 33-37) to one or more remote devices (Fig. 1, RU), wherein the first downstream signal includes first timing information based on a first symbol clock (transmission of barker codes from the CU to RUs include chip clock, paragraph [0004], page 1, lines 1-6) and first data having a first forward error correction (FEC) alignment (timestamp message encapsulated into forward error correction frames in MCNS downstream, paragraph [0134], page 13, lines 1-4);

a second downstream transmitter configured to transmit a second downstream signal (synchronous clock signal transmission for other direction, paragraph [0012], page 2, lines 38-39) to the one or more remote devices (Fig. 1, RU), wherein the second downstream signal includes second timing information based on a second symbol clock (Fig. 1, chip clock; downstream symbol clock, paragraph [0012], page 2, line 9) of the second downstream transmitter; and a synchronization element configured to synchronize the first symbol clock and the second symbol clock (downstream symbol clock synchronized with the CU master clock, paragraph [0012], page 2, lines 11-12).

Grimwood et al. fails to disclose second downstream transmitter and signal using the second downstream transmitter.

But, Rakib discloses downstream transmitter transmits sync message (signal) which contains the timestamp, paragraph [0016], page 2, lines 1-3.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Rakib's limitation because this would have allowed synchronization on the downstream in the CMTS which serves as the master clock, paragraph [0002], page 1, lines 3-6).

Regarding Claim 10, Grimwood et al. discloses the apparatus (Fig. 6 CU, CMTS) of claim 9, wherein the first downstream transmitter is configured to transmit a notification message (Fig. 6, 262, CMTS sends message to RU; messages normally sent between the CU and the RU frames, paragraph [0014], page 2, lines 5-8) to the one or more remote devices indicating that the first downstream signal will be terminated (Fig. 7, 300, with the upstream and downstream clock sync (a first signal is not transmitted (termination); 302, process looks and waits (non transmission termination) for message (first signal) to arrive) prior to a termination of transmission (Fig. 22, start/end of superframe) of the first downstream signal (downstream data transmitted by the CU, paragraph [0012], page 2, lines 10).

Regarding Claim 11, Grimwood et al. discloses the apparatus (Fig. 6 CU, CMTS) of claim 9, wherein the apparatus is a cable modem termination system (CMTS) (Fig.6, CU is CMTS, paragraph [0106], page 11, line 1).

Regarding Claim 20, Grimwood et al. discloses the method of claim 1, wherein the transmitting the second downstream signal (synchronous clock signal transmission for other direction, paragraph [0012], page 2, lines 38-39) is performed after the terminating (Fig. 22, start/end of superframe).

Regarding Claims 21 and 29, Grimwood et al. discloses the apparatus and method, wherein the synchronization element is configured to synchronize the first symbol clock (Fig. 1, master clock 10; CU master clock, paragraph [0012], page 2, line 12) and the second symbol clock (Fig. 1, chip clock; downstream symbol clock, paragraph [0012], page 2, line 9) by adjusting one or more of the first and second symbol clocks (all clocks in both the RU and CU being synchronized in the CU, paragraph [0020], page 3, lines 3-5) to align (RU's synchronized aligned in time at the CU, paragraph [0006], page 1, lines 1-3) the first symbol clock to the second symbol clock.

Regarding Claims 22 and 30, Grimwood et al. discloses the apparatus and method, wherein the synchronization element is configured to synchronize the first symbol clock and the second symbol clock by measuring a magnitude of a misalignment (alignment offset for the RU to the CU clock of the time offset between the CU frame and the RU frame by sampling a counter clock when a downstream sync message is received with the offset calculated, paragraph [0014], page 2, lines 3-11) of the first symbol clock and the second symbol clock.

Regarding Claims 23 and 31, Grimwood et al. discloses the apparatus and method, wherein the second timing information further includes calibration (offset calculated and the boundary adjusted per this calculation to establish precise frame alignment with downstream sync message, paragraph [0014], page 2, lines 10-14) information relating to the misalignment (misalignments of data from other RU's, paragraph [0016], page 2, lines 2-3) to the one or more remote devices.

Regarding Claims 24 and 32, Grimwood et al. discloses the apparatus and method, wherein the first downstream signal further includes data relating to a forward error correction (FEC) alignment (message encapsulated into forward error correction frames in MCNS downstream, paragraph [0134], page 13, lines 1-4) of the first downstream signal.

Regarding Claims 25 and 33, Grimwood et al. discloses the apparatus and method, wherein the second downstream signal further includes data relating to a FEC alignment (data frames are broken down into packets and sent downstream in a continuous stream after FEC encoding, paragraph [0005], page 1, lines 3-6) of the second downstream signal.

Regarding Claims 26 and 34, Grimwood et al. discloses the apparatus and method, wherein synchronization element is further configured to synchronize the FEC alignment of the second downstream signal to the FEC alignment of the first downstream signal (time of insertion of sync messages are always inserted in the same place in the FEC frame, paragraph [0015], page 2, lines 4-6).

Regarding Claims 27, 35 and 36, Grimwood et al. discloses the apparatus and method, wherein synchronization element is further configured to generate calibration information based on the FEC alignment of the first downstream signal and the FEC alignment of the second downstream signal (Fig. 9, Table 1 and Fig 10, Table 2 sync start position and adjustment in FEC frames).

Regarding Claim 28, Grimwood et al. discloses the apparatus of claim 9, wherein the second downstream transmitter is further configured to transmit the second downstream signal (synchronous clock signal transmission for other direction, paragraph [0012], page 2, lines 38-39) in response to a termination of transmission (Fig. 22, start/end of superframe) of the first downstream signal (Fig. 7, 302, process looks and waits (non transmission) for message (first signal) to arrive, and 305, waits for second message (after first message did not arrive (terminated)).

Grimwood et al. fails to disclose second downstream transmitter and signal using the second downstream transmitter.

But, Rakib discloses downstream transmitter transmits sync message (signal) which contains the timestamp, paragraph [0016], page 2, lines 1-3.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Rakib's limitation because this would have allowed synchronization on the downstream in the CMTS which serves as the master clock, paragraph [0002], page 1, lines 3-6).

2. **Claim 2** is being rejected under 35 U.S.C. 103(a) as being unpatentable by Grimwood et al. in view of Rakib and Lee et al. (Patent No.: US 6,539,050 B1).

Regarding Claims 2, Grimwood et al. discloses the method (method, Title, line 1) of claim 1, further comprising:

transmitting a notification message (Fig. 6, 262, CMTS sends message to RU; messages normally sent between the CU and the RU frames, paragraph [0014], page 2, lines 5-8) to the one or more remote devices indicating that the first signal will be terminated (signals to stop adding (terminate) payload bytes to the downstream and add all the bytes of the sync message at the appropriate insertion point, paragraph [0157], page 15, lines 3-6) prior to termination of transmission of the first signal (Fig. 11, reset and initialize of the downcounter (resulted in the first signal being terminated).

The combination of Grimwood et al. and Rakib fails to specifically disclose signal termination prior to the termination of transmission.

But, Lee et al. discloses signal terminated approximately when the transmission of the signal is terminated, column 5, lines 2-5.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Lee et al.'s limitation since this would have provided coherent detection without causing undesirable intracell interference (column 5, lines 5-7).

Response to Arguments

3. Applicant's arguments filed October 28, 2010 have been considered as follows:

- In the remarks on pages 7-9 of the amendment, applicant contends that the combination of Grimwood et al., Rakib and/or Lee et al. fails to teach or suggest: (1) terminating transmission of the first downstream signal; transmitting a second downstream signal; the second downstream transmitter to the one or more remote devices; the second signal includes timing information based on the second symbol clock. (2) first downstream signal includes timing information based on the first symbol clock.
- The examiner respectfully maintains the prior prosecution, and further adds that Grimwood et al. discloses: (1). terminating transmission of the first downstream signal (time between the CU and RU frame boundaries when the downstream message is received, [0014], page 2, lines 7-10); transmitting a second downstream signal (downstream synchronous clock signal from the other direction of transmission (other transmitter), paragraph [0012], page 2, lines 38-41); the second downstream transmitter to the one or more remote devices (Fig. 1, RU), the second signal includes timing information based on the second symbol clock (downstream symbol clock from the downstream data transmitted and synchronized with the CU master clock, paragraph [0012], page 2, lines 9-12). (2) first downstream signal includes timing

information based on the first symbol clock (downstream to establish a reference to the CU master clock such that determination made of the time between the CU and the RU boundaries, paragraph [0014], page 2, lines 5-8).

Conclusion

4. **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Andrews whose telephone number is (571) 270-1801. The examiner can normally be reached on Monday through Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rao S. Seema can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LA/la
January 1, 2011

/Kevin C. Harper/
Primary Examiner, Art Unit 2462